imported, but advantage is taken of the well-known natural laws which regulate the increase of life to effect in this instance a salutary decrease.

P. L. SCLATER.

Zoological Society of London,
3, Hanover Square, W., March 18, 1889.

NOTES.

THE number of candidates for the Fellowship of the Royal Society this year is seventy-one, being about a dozen above the average number.

THE contributions hitherto paid or promised in this country towards the intended statue of G. S. Ohm amount to £95 14*s.* 6*d.* from ninety-four subscribers. It is proposed that the subscription-list shall be closed at the end of the present month, and we are desired by the Committee to ask intending subscribers to send their contributions as early as convenient to the Treasurer, Dr. Hugo Müller, F.R.S., 13 Park Square, N.W.

A COMMITTEE was formed some time ago at Limoges for the purpose of securing the erection of a statue of the great French physicist and chemist, Gay-Lussac. The preliminary arrangements have now been made, and the task of preparing the statue has been intrusted to M. Millet, who expects to be able to exhibit it at the *Salon* next year.

WE have to congratulate the Fishery Board for Scotland upon the acquirement of the services of Dr. J. Beard, who for some years has been working on the Continent. Dr. Beard's researches into the development of fishes take rank among the leading recent contributions to the subject, and they augur well for the future work of the Board. We are pleased to see that the members of this body are now issuing their scientific Bulletins independently of their official Reports.

MR. W. E. HOYLE, late of the *Challenger* Office, has been appointed to the Curatorship of the Manchester Museum in the Owens College. The Museum Committee is fortunate in having secured the services of so competent a man.

A VALUABLE collection of photographs, representing Alpine and Caucasian scenery, taken by the late Mr. W. F. Donkin, is now being exhibited at the Gainsborough Gallery, 25 Old Bond Street.

WE regret to have to record the death, at a very early age, of Mr. J. Reynolds Vaizey, a promising member of the younger school of botanists at Cambridge. His best-known contributions to botanical science are his papers in the first volume of the *Annals of Botany*, on "The Transpiration of the Sporophore of the Musci," and on "The Absorption of Water, and its Relation to the Constitution of the Cell-wall in Mosses." Mr. Vaizey was subject to epileptic fits, and, during one of these, received fatal injuries from falling into the fire.

THE oldest botanical journal of Germany, *Flora*, hitherto published at Regensburg, under the auspices of the Bavarian Botanical Society, appears now, in its seventy-second year, under a new form, issued at Marburg, under the editorship of Prof. K. Goebel. In addition to original papers, it will contain a *résumé* of botanical work during the year in different departments. The first part under the new *régime*, for March, contains important papers by Goebel, Pfeffer, Ludwig, J. Müller, and others.

IN the March number of the *Kew Bulletin* there are papers on fibre industry at the Bahámas, hardy species of Eucalyptus, yam bean, West African rubbers, Phylloxera in Asia Minor, botanical station at Lagos, and Chiga bread.

AT the meeting of the Scientific Committee of the Royal Horticultural Society on March 12, corroborative information was received from Mr. Plowright, of Lynn, regarding the occurrence, described at the previous meeting, of boughs of various trees being broken off by the extraordinary growth of crystals of rime upon them. As no snow had fallen during the period, it was impossible to attribute the results to such a cause. There had been excessive fog before January 7; the rime forming upon the telephone wires was so great that they were broken down. The ice was deposited unilaterally like flat sheets of glass, 1½ to 2 inches in width on the south side. On the 8th was a thaw. The result of the frost was that a birch had a branch amounting to one-third of the tree broken off; the smaller branches particularly suffered. The elms were most injured, branches of all sizes being broken off, even large arms, one measuring 5 feet 6 inches in circumference and 1 foot 10 inches in diameter. To such an extent was the roadway covered with *débris*, that the market carts were greatly impeded. Oaks, willows, and poplars also suffered; but ashes and Scotch firs escaped. Mr. Plowright noticed that fracture without falling was a distinct feature of rime-injuries to trees, excepting to willows and poplars, the vast majority of whose branches fell to the ground.

THE Society established some months ago under the name of the Gesellschaft Urania has already issued the sixth monthly number of its excellent magazine, *Himmel und Erde*, which is edited by Dr. W. M. Meyer. The main object of the Society is to popularize the accurate knowledge of scientific matters, by practical demonstrations at the head-quarters in Berlin, and through the medium of its magazine. Astronomy, as it always did and always must, leads the way in this attempt to interest the general public in science. Since it is expounded by such authorities as Prof. Schiaparelli, whose illustrated article on Mars runs through the first three numbers, it is evident that the Society does not mean to sacrifice genuineness for the sake of popularity. Dr. Scheiner, of the Potsdam Observatory, contributed an admirable article to the January number, on the principles of spectrum analysis and their application to celestial physics. Astronomical articles have also been contributed by Prof. Foerster, Prof. Seeliger, F. K. Ginzel, and others. Other subjects, however, have not been neglected. A clear exposition of the proofs of subsidence and elevation afforded by the pillars of the Temple of Jupiter Serapis was given by Dr. Brauns in the November number. The January number also contains an excellent article on the aurora, by Dr. Weinstein. The magazine is got up in an attractive style, and is admirably illustrated. The Society has purchased a 13-inch refractor, several microscopes, and other apparatus for the demonstrations; and it is their intention to have models constructed to illustrate eclipses and other phenomena.

THE Educational Society of Japan has, says the *Japan Weekly Mail*, published and circulated a little volume containing its programme, organization, and a list of its members. It is worthy of note that, in the artistic device on the cover, women are conspicuous, and the fact that women are carrying on their studies side by side with men would seem to indicate that the Society is desirous of recognizing the equality of the sexes. No fewer than 5000 members have joined the ranks of the Association, and a kind of committee or parliament is elected by these for purposes of discussion and deliberation, consisting of 200 deliberative members, seven councillors, seven sectional presidents, and one president.

AN interesting step has been taken in Japan by the organization of a branch of the Anthropological Society of Tokio, to be called the "Maine Club," after the late Sir Henry S. Maine, having for its object the investigation of the ancient laws and customs of Japan, and all matters connected with the development and progress of civilization in that country. Its members are chiefly members of the parent Society, but membership is not confined to these. It is proposed that there shall be monthly meetings at which papers will be read, and discussions held. Well-known scholars are to be invited to attend the meetings, and contribute to the discussions. Essays or speeches which are considered to be of sufficient importance will be printed either separately or in the volume of Transactions of the Anthropological Society.

AT the meeting of the French Meteorological Society on February 5, M. Lemoine communicated the information he had collected upon the rising of the Upper Rhone from the 3rd to the 5th of October last. The maximum rise was on the 5th at Lyons, where it reached 14 feet. The cause of the rise was a severe thunderstorm which broke out at 2 a.m. on October 2, with incessant rain over a large area lasting until the evening of the 5th.

THE Pilot Chart of the North Atlantic Ocean, issued by the Washington Hydrographic Office, for March, shows that gales were experienced in the western part of the Atlantic during the first three weeks of February. The most noteworthy was one which originated on the 10th, just north of the Bahamas; on the 12th its influence was felt, noticeably from Newfoundland to the West Indies, and from the American coast to the 45th meridian. More fog was experienced than is usual during February. The southward movement of ice was very backward, no field ice or bergs having been reported till February 6, in lat. 45° 35′ N., and long. 48° W. The chart contains brief rules for the use of oil at sea.

THE "Administration Report" of the Surveyor-General of Ceylon, for the year 1887, contains meteorological summaries for sixteen observatories, and monthly rainfall values for seventy-one stations. The mean temperature of the year was below the average at almost every station, and a comparison of the records since 1882 proves that there has been a fall of temperature throughout the island up to the present time. A map is given, showing the mean annual rainfall of the various districts, and a table showing the monthly means during different periods. The returns from Ceylon have been regularly published since 1869.

TWO shocks of earthquake occurred at Bologna on March 9, but no damage was done. A severe shock was noticed at Aquila on March 10.

THE vapour-density of aluminium methide, $[Al(CH_3)_3]n$, has formed the subject of an important series of experiments by Dr. Quincke, of Göttingen, with the view of further elucidating the question of the valency of aluminium. A few months ago, Messrs. Louïse and Roux published an account of their experiments upon the same substance, from which they conclude that molecules of the constitution $Al_2(CH_3)_6$ are capable of existence. This result was in direct contradiction to the earlier observations of Messrs. Buckton and Odling, who showed that, even at the boiling-point itself, 130° C., the density was considerably lower than that required for this double formula; from the boiling-point upwards the density gradually diminished, until, at the temperature at which this organo-metallic body unfortunately commences to decompose, it had almost reached that required for $Al(CH_3)_3$. Hence a revision of the subject has been undertaken by Dr. Quincke at the request of Prof. Victor Meyer. The aluminium methide employed was a very pure specimen, of constant boiling-point, and solidifying, on cooling, in the form of magnificent tabular crystals. Analyses gave practically theoretical numbers. The vapour-density was determined in a Victor Meyer apparatus in an atmosphere of hydrogen. Of course, the all-important point to decide was the nature of molecular grouping just above the boiling-point, and, if such molecules were found to exist at all, to ascertain whether the value required for $Al_2(CH_3)_6$ remained constant for a sufficient interval of temperature. The experiments were therefore performed at the temperature of boiling xylene (140°), only 10° higher than the boiling-point of the methide. The mean value for the density, obtained from ten consecutive determinations, was 3·92; $Al_2(CH_3)_6$ requires 4·98, and $Al(CH_3)_3$ corresponds to 2·49. Hence it can no longer be doubted that molecules of the double formula are incapable of existence. Aluminium methide must therefore be represented by $Al(CH_3)_3$. Readers of NATURE will remember that only a fortnight ago an account was given in these columns (p. 417) of an analogous series of experiments by M. Alphonse Combes, upon a new organic aluminium compound, $Al(C_5H_7O_2)_3$, aluminium acetyl acetonate. It is supremely satisfactory that in this case the density, at a temperature only 45° above the boiling-point, was found to actually correspond precisely with that required by the triad formula, precluding again the possibility of the existence of molecules of the type Al_2R_6. Taking the mass of evidence now before us, it may fairly be granted that the stable molecules of aluminium salts are constructed upon the type AlR_3; and aluminium in this respect thus completely resembles iron, chromium, indium, and gallium.

A REPORT of Mr. D. Hooper, the Government Quinologist in the Nilgiris, says that efflorescent salts occur in nearly every district of India. When the salt is alkaline in its nature, the surface of the soil on which it collects is known as dhobies' earth, which has for ages been used in various manufactures, and for washing and dyeing. A large quantity of the efflorescence of Northern India, which is sold in the bazaars as *sajji mati*, is a mixture of salts, where the sulphate and chloride of sodium preponderate over the carbonate. Dhobies' earth consists principally of sodium carbonate and sand; the other ingredients are organic matters and sodium chloride, with traces of sulphate of clay, oxide of iron, and lime.

IN the Report on the Blue-book of 1887, the Colonial Secretary for Ceylon says that the operations of the Survey Department during the year were most important and varied. Not only was the ordinary work of surveying Crown land for sale carried on, but a large amount of surveying was undertaken in connection with irrigation schemes and forest reservation. The minor triangulation of the island was continued, and thirty new stations were established. The great triangulation of the northern part of the island, for the purpose of connecting the Ceylon system with the Madras coast series of the great Trigonometrical Survey of India, was completed, as described in these columns some time ago. Considerable advance was also made with the surveys of roads, streams, and lakes in all the provinces; and a vast amount of other work, including surveys of the coast-line, surveys of villages for forest reservation purposes, &c., was satisfactorily completed.

A RECENT American Consular Report contains a long account of the industrial school at Reichenberg, which was founded by the Imperial and Royal Ministry of Public Instruction as a technical school of the middle grade, with the object of educating young men for important industrial and manufacturing positions. The institution is divided into a high school and a workmaster's school, and each of these is subdivided into branches for architecture, mechanical arts, and chemistry. In the high school a very high standard of general education is maintained, and the students are prepared, by systematic courses of lectures, for practical work. The workmasters' school is open to persons who have already worked in architecture, or in some mechanical art, or in chemistry. Besides these schools there is one at night for the benefit of persons who are compelled to work during the day, the instruction given relating chiefly to drawing and modelling. This institution is now being taken as a model for other schools which are in course of establishment by the Russian Government.

In the report, to the Foreign Office, of Sir A. Nicholson on the agriculture of Hungary during the past year, it is said that in November last a new agricultural school was opened in the Torontáler country, and at the end of the year there existed an academy of forestry at Chemnitz, a veterinary school at Buda-Pesth, an agricultural school in Hungarian Altenburg, four other agricultural academies in various parts of the country, and six schools. There were eight institutions for giving instruction in viticulture, three of which were in receipt of a fixed subvention. A proposal made to establish a high school for forestry and agriculture at Buda-Pesth has, for the present, fallen through. A Director-General has been appointed for all the agricultural schools; and a staff of travelling teachers for certain branches of agriculture has been formed. This staff, however, needs organization similar to that in Austria and France. Up to the present the members of the staff seem to have devoted themselves chiefly to instructing in agriculture and viticulture. Some years ago a body of engineers was formed under the control of the Ministry for Agriculture, with the object of assisting proprietors and farmers in irrigation, drainage, and other similar works, and of watching over water rights and fisheries. At present the number of these engineers is too small for the needs of the country.

A new stalactite cave has lately been discovered by accident near the little village of Erlach, in Lower Austria. It is about 60 metres long, and contains a shaft filled with water. The floor and walls are covered with stalactites and stalagmites picturesquely grouped, varying in colour from brown and green to white.

At the annual general meeting of the Linnean Society of New South Wales, on January 30, Prof. W. J. Stephens, in his Presidential Address, took occasion to discuss Dr. Waagen's ideas as to the supposed Upper Carboniferous glacial period, and its assumed bearing upon the correlation of various Upper Palæozoic and Mesozoic formations in India, South Africa, and Australia. Prof. Stephens's object was to show that no general glaciation had ever taken place in the temperate regions of the southern hemisphere, and that evidences of local glaciation, as of glaciers, floating ice, whether of icebergs or river ice-rafts, cannot be regarded as of any value in the determination of the question of the relative ages of members of geographically distant formations.

The new number of the *Mineralogical Magazine* contains, besides Mr. L. Fletcher's address on the renaissance of British mineralogy, the following papers: a mangano-magnesian magnetite, by Prof. A. H. Chester; on the zeolites of Rye Water, Ayrshire, and the minerals of the Treshinish Islands, by Prof. M. F. Heddle; elaterite, a mineral-tar in Old Red Sandstone, Ross-shire, by Mr. W. Morrison; analyses of various mineral substances, by Prof. I. Macadam; on the supposed fall of a meteoric stone at Chartres, Eure-et-Loir, France, in September 1810, by Mr. L. Fletcher; calcites from the neighbourhood of Egremont, Cumberland, by Mr. H. A. Miers; on the large porphyritic crystals of felspar in certain basalts of the Isle of Mull, by Mr. T. H. Holland. Mr. Allan Dick has a paper in which he describes a new form of microscope.

The United States Geological Survey has published the fifth volume of the series entitled "Mineral Resources of the United States," by David T. Hay, Chief of Division of Mining Statistics and Technology. This volume contains a summary statement of the mineral substances produced in the United States in the year 1887, and chapters showing the features of the principal mining industries during that period.

Several valuable Bulletins of the United States Geological Survey (Nos. 40–47) have just been issued. One of them (No. 44) consists of a bibliography of North American geology for 1886.

Vol. III., Part 1, of the *Folk-Lore Journal* contains, amongst other interesting matter, papers on African folk-lore, by Edward Clodd; on Wexford folk-lore; and on superstitions of Scottish fishermen, by E. E. Guthrie. This volume also contains the Annual Report of the Council of the Folk-Lore Society, in which it is said that many new members have joined the Society. Amongst the losses by death during the past year have been Sir H. S. Maine, Mr. J. C. Morison, Mr. R. Proctor, and Mr. Gifford Palgrave.

The Geneva Society of Physics and Natural History has issued the first part of vol. xxx. of its Memoirs. It opens with an address by the President, M. Victor Fatio, giving an account of the work done by the members of the Society in the course of the year 1887.

Mr. John Anderson has compiled an interesting "History of the Belfast Library and Society for promoting Knowledge, commonly known as the Linen Hall Library" (Belfast: M'Caw, Stevenson, and Orr). It has been published in connection with the hundredth anniversary of the institution. Some valuable old maps of Belfast are reproduced in the volume.

Part 5 of Cassell's excellent "New Popular Educator" has been issued. Like the preceding parts, it is carefully illustrated.

Dr. A. B. Griffiths's "Treatise on Manures" will be published, in a few days, by Messrs. Whittaker and Co., of Paternoster Square.

Messrs. William Wesley and Son have issued No. 94 of their "Natural History and Scientific Book Circular." It contains a catalogue of works relating to the various branches of physical science.

The additions to the Zoological Society's Gardens during the past week include a Fruit Bat (*Cynonycteris*, sp. inc.) from India, presented by Mr. W. Jamrach; two Pine Grosbeaks (*Pinicola enucleator*), two Waxwings (*Ampelis garrulus*), a Nightingale (*Daulias luscinia*), British, presented by Mr. J. Young; a Great Eagle Owl (*Bubo maximus*), European, presented by Mrs. Morant; a Cactus Conure (*Conurus cactorum*) from Brazil, presented by Mr. W. H. St. Quintin; a Common Moorhen (*Gallinula chloropus*), British, presented by Mr. G. Hayward; a Rhesus Monkey (*Macacus rhesus* ♀) from India, two Nicobar Pigeons (*Calœnas nicobarica*) from the Indian Archipelago, deposited; a Buffon's Touracou (*Corythaix buffoni*) from West Africa, purchased.

OUR ASTRONOMICAL COLUMN.

Rowland's Photographic Map of the Normal Solar Spectrum.—Prof. Rowland has been engaged since the publication in 1886 of his first photograph of the spectrum, in endeavouring to perfect it, and has now completed a new map, which he considers much superior to the former. The entire work has been gone over again; a new dividing-engine has been constructed, and several concave gratings ruled by its means, some of which give especially fine definition. Much greater attention has been paid to the photographic manipulation, and the prints are, it is said, much finer and more perfect than those of the first series, which, however admirable as representations of the spectrum, as photographic works of art